4.0 BUILD-OUT

An important exercise in the master planning process is the build-out analysis. This exercise assumes that the existing land-use regulations and policies remain in effect for the life of the plan and provides a view of what the implications of the "do nothing" approach to amending these regulations might be for the City. The build out identifies the undeveloped and under-developed land within the City limits that is not subject to significant development constraints. These lands are then evaluated to determine the maximum development potential of these properties under the current zoning. Because one of the goals of a build-out exercise is to calculate the maximum potential impact on municipal services and finances, it is generally assumed that development will be residential in nature to the maximum extent permitted by zoning in a particular area.

The results of the build-out analysis are then used to calculate the potential added demand that may be placed on municipal services, schools, and finances. From these studies, a clearer understanding emerges of where the City might be headed if its current land-use policies remain unchanged. This vision can be compared to the community's vision developed through the planning process and appropriate recommendations can be made for policy and regulatory changes that might move the City closer to the desired vision. A more quantitative fiscal analysis can also be conducted comparing the net municipal cost of the build out scenario to the potential tax revenues that might be gained from the added development and the anticipated municipal expenditures that will accompany the master plan's implementation.

4.1 METHODOLOGY

In order to determine a maximum build-out scenario under the current zoning for a substantially built-out city like Lowell, a non-traditional strategy must be considered. A traditional build-out analysis will focus on identifying vacant, undeveloped, and significantly under-developed individual parcels; calculate the total area "available for development;" introduce a locally-appropriate multiplier to eliminate wetlands, access ways, topography and other development constraints; and multiply what remains by the number of housing units the zoning permits.

For Lowell, this methodology would identify a handful of parcels and suggest that the City is basically built-out. Unfortunately, it would be unable to find or recognize the true potential impact of the projects typically seen today where a number of contiguous parcels that would not individually yield any new building lots are combined and resubdivided to create a significant number of new housing units. The recently approved subdivisions at 597 Pine Street and Habitat for Humanity's Charles Street development, each of which proposes six new housing units are typical examples. Using a traditional methodology, 597 Pine Street might have been flagged as under-developed and identified as a potential site for one or two additional units. The Habitat site would have probably been missed altogether because only one of the parcels that were combined was large enough to flag as "buildable" in a conventional build-out study, but would probably have been eliminated by a multiplier that accounted for development constraints.

To better address the potential impact of these types of developments, as well as more straightforward development opportunities, the following methodology has been employed:

1. Using the GIS system, all locations in the City where approximately one acre or more of contiguous unbuilt land exists were identified, eliminating building footprints, wetlands, parks, open space, rights-of-way, active railroad lines, extreme grades, areas of documented significant environmental contamination, and utility easements. A visit was made to each of these sites, confirming the observations made from GIS data. The land area of each parcel

was then be divided by the minimum lot size, adjusted by a factor of 1.5 to account for land typically taken up by public ways, retention ponds, and other public works as well as inefficient lotting in recent Lowell subdivisions. This calculation yielded the maximum potential number of lots that might be created from the parcel. A similar calculation was done using the minimum lot area per dwelling unit zoning requirements to determine the maximum potential number of additional housing units that might be created on each parcel. As proscribed by the Lowell Zoning Code, commercially-zoned parcels are treated as if they were zoned UM-2 (Urban Multifamily). Industrially-zoned parcels are treated as if they were zoned UM-2 for dimensional requirements, but restricted to single-family use as proscribed in the Table of Uses for purposes of calculating the number of potential dwelling units.

2. The number of new units to be created through the rehab of currently vacant buildings in the Acre and Jackson/Appleton/Middlesex Urban Renewal Areas and the Lawrence Mills Redevelopment Plan have been estimated and added to the totals.

3. All vacant parcels in the Assessor's records that are larger than 6,000 square feet (the minimum lot area in the most permissive residential zone) have been identified. Those parcels that have been addressed by exercise one above have been eliminated. Each remaining parcel was then reviewed for frontage, greater zoning requirements, and the number of parcels that could yield more than one building lot through the ANR process to determine a typical number of buildable lots per vacant lot over 6,000 square feet.

4. All residential parcels greater than 15,000 square feet that might be divided to create an additional lot through an ANR process have also been identified using assessing records. Those parcels that are addressed in either of the above exercises were eliminated. These parcels were then reviewed individually to determine how many additional building lots could be created through the ANR process.

4.2 Conclusions

The build-out study identified 372 acres of land remaining in Lowell that could potentially be subdivided or otherwise developed with a significant number of additional dwelling units. If this acreage were developed to its maximum capacity under the current zoning, it would result in the construction of 2,909 additional dwelling units for 6,342 new residents. Approximately one third of this land is located in the western portion of the Pawtucketville neighborhood. The study also identified 459 individual lots which could be created from either buildable vacant lots or large residential parcels that could be subdivided through the Approval Not Required (ANR) process to yield an additional building lot. These parcels would account for a maximum of 1414 additional dwelling units and 3,083 additional residents scattered relatively evenly throughout the City.

The results of these exercises have been summarized in the attached tables and maps. Impact calculations are based on multipliers supplied by the Commonwealth's Executive Office or Environmental Affairs, City of Lowell Department of Public Works, and the ITE Trip Generation Manual. The following multipliers were used in the calculations:

- 2.18 additional residents per new dwelling unit
- 75 gallons of water consumption/day for each additional resident
- 9.0 new vehicle trips/day for each additional dwelling unit
- 1.17 tons of solid waste/year per dwelling unit (62% of total waste)
- 0.72 tons of recyclable waste/year per dwelling unit (38% of total waste, current City recycling levels are closer to 15%)

Table 4-1
Build-Out Summary – Large Parcels for Subdivision or Multi-Family Developments

TRACT	Neighborhood	2000 Population	Potential Building Lots	Potential Dwelling Units	Additional Residents	Population at Build-Out	Additional Water Demand gal/day	Additional Non-Recyclable Solid Waste tons/yr	Additional Recyclable Solid Waste tons/yr	Additional Vehicle Trips/Day
3101	Downtown	3,881	24	149	325	4,206	24,362	174	107	1,341
3102	Christian Hill	6,070	49	49	107	6,177	8,012	57	35	441
3103	Centralville	6,157	19	63	137	6,294	10,301	74	45	567
3104	Centralville	3,581	4	8	17	3,598	1,308	9	6	72
3105	Pawtucketville	3,353	0	0	0	3,353	0	0	0	0
3106.01	Pawtucketville	5,392	540	1203	2,623	8,015	196,691	1,408	866	10,827
3106.02	Pawtucketville	5,610	148	297	647	6,257	48,560	347	214	2,673
3107	Acre	4,575	23	23	50	4,625	3,761	27	17	207
3108	Acre	2,457	0	0	0	2,457	0	0	0	0
3110	Acre	2,754	N/A	140	305	3,059	22,890	164	101	1,260
3111	Acre	2,286	N/A	194	423	2,709	31,719	227	140	1,746
3112	L. Highlands	3,374	5	5	11	3,385	818	6	4	45
3113	Highlands	3,954	12	12	26	3,980	1,962	14	9	108
3114	Highlands	5,857	17	17	37	5,894	2,780	20	12	153
3115	Highlands	2,908	0	0	0	2,908	0	0	0	0
3116	Highlands	5,099	169	169	368	5,467	27,632	198	122	1,521
3117	L. Highlands	4,923	0	0	0	4,923	0	0	0	0
3118	L. Highlands	3,516	8	36	78	3,594	5,886	42	26	324
3119	Back Central	2,666	3	6	13	2,679	981	7	4	54
3120	Back Central	2,977	0	0	0	2,977	0	0	0	0
3121	Sacred Heart	3,112	7	7	15	3,127	1,145	8	5	63
3122	Sacred Heart	4,741	64	78	170	4,911	12,753	91	56	702
3123	South Lowell	5,023	132	137	299	5,322	22,400	160	99	1,233
3124	L. Belvidere	2,405	9	9	20	2,425	1,472	11	6	81
3125.01	Belvidere	4,497	61	108	235	4,732	17,658	126	78	972
3125.02	Belvidere	3,999	33	199	434	4,433	32,537	233	143	1,791
	City of Lowell	**105,167**	**1,327**	**2,909**	**6,342**	**111,509**	**475,622**	**3,404**	**2,094**	**26,181**

Source: City of Lowell Division of Planning and Development

Table 4-2
Build-Out Summary – Vacant Parcels and Potential ANR Lots

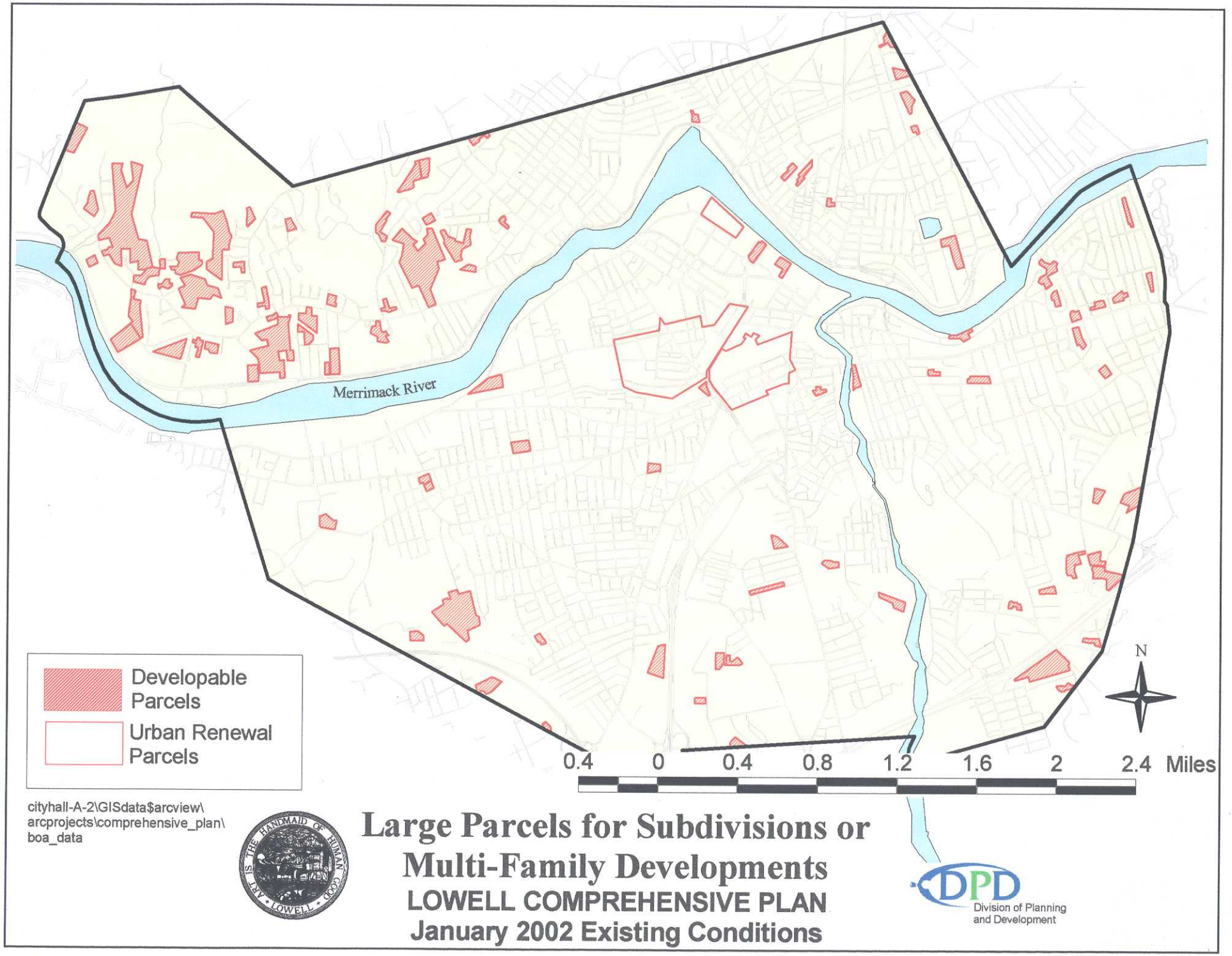
TRACT	Neighborhood	2000 Population	Potential Building Lots	Potential Dwelling Units	Additional Residents	Population at Build-Out	Additional Water Demand gal/day	Additional Non-Recyclable Solid Waste tons/yr	Additional Recyclable Solid Waste tons/yr	Additional Vehicle Trips/Day
3101	Downtown	3,881	4	15	33	3,914	2,453	18	11	135
3102	Christian Hill	6,070	27	30	65	6,135	4,905	35	22	270
3103	Centralville	6,157	30	166	362	6,519	27,141	194	120	1,494
3104	Centralville	3,581	12	63	137	3,718	10,301	74	45	567
3105	Pawtucketville	3,353	23	68	148	3,501	11,118	80	49	612
3106.01	Pawtucketville	5,392	32	68	148	5,540	11,118	80	49	612
3106.02	Pawtucketville	5,610	38	82	179	5,789	13,407	96	59	738
3107	Acre	4,575	18	154	336	4,911	25,179	180	111	1,386
3108	Acre	2,457	2	14	31	2,488	2,289	16	10	126
3110	Acre	2,754	2	8	17	2,771	1,308	9	6	72
3111	Acre	2,286	2	9	20	2,306	1,472	11	6	81
3112	L. Highlands	3,374	8	22	48	3,422	3,597	26	16	198
3113	Highlands	3,954	13	83	181	4,135	13,571	97	60	747
3114	Highlands	5,857	32	84	183	6,040	13,734	98	60	756
3115	Highlands	2,908	7	15	33	2,941	2,453	18	11	135
3116	Highlands	5,099	30	51	111	5,210	8,339	60	37	459
3117	L. Highlands	4,923	12	48	105	5,028	7,848	56	35	432
3118	L. Highlands	3,516	8	42	92	3,608	6,867	49	30	378
3119	Back Central	2,666	5	35	76	2,742	5,723	41	25	315
3120	Back Central	2,977	7	33	72	3,049	5,396	39	24	297
3121	Sacred Heart	3,112	10	21	46	3,158	3,434	25	15	189
3122	Sacred Heart	4,741	38	77	168	4,909	12,590	90	55	693
3123	South Lowell	5,023	46	95	207	5,230	15,533	111	68	855
3124	L. Belvidere	2,405	6	21	46	2,451	3,434	25	15	189
3125.01	Belvidere	4,497	20	64	140	4,637	10,464	75	46	576
3125.02	Belvidere	3,999	27	46	100	4,099	7,521	54	33	414
City of Lowell		**105,167**	**459**	**1,414**	**3,083**	**108,250**	**231,189**	**1,654**	**1,018**	**12,726**

Source: City of Lowell Division of Planning and Development

Table 4-3
Build-Out Summary – Total

TRACT	Neighborhood	2000 Population	Potential Building Lots	Potential Dwelling Units	Additional Residents	Population at Build-Out	Additional Water Demand gal/day	Additional Non-Recyclable Solid Waste tons/yr	Additional Recyclable Solid Waste tons/yr	Additional Vehicle Trips/Day
3101	Downtown	3,881	28	164	358	4,239	26,814	192	118	1,476
3102	Christian Hill	6,070	76	79	172	6,242	12,917	92	57	711
3103	Centralville	6,157	49	229	499	6,656	37,442	268	165	2,061
3104	Centralville	3,581	16	71	155	3,736	11,609	83	51	639
3105	Pawtucketville	3,353	23	68	148	3,501	11,118	80	49	612
3106.01	Pawtucketville	5,392	572	1271	2,771	8,163	207,809	1,487	915	11,439
3106.02	Pawtucketville	5,610	186	379	826	6,436	61,967	443	273	3,411
3107	Acre	4,575	41	177	386	4,961	28,940	207	127	1,593
3108	Acre	2,457	2	14	31	2,488	2,289	16	10	126
3110	Acre	2,754	2	148	323	3,077	24,198	173	107	1,332
3111	Acre	2,286	2	203	443	2,729	33,191	238	146	1,827
3112	L. Highlands	3,374	13	27	59	3,433	4,415	32	19	243
3113	Highlands	3,954	25	95	207	4,161	15,533	111	68	855
3114	Highlands	5,857	49	101	220	6,077	16,514	118	73	909
3115	Highlands	2,908	7	15	33	2,941	2,453	18	11	135
3116	Highlands	5,099	199	220	480	5,579	35,970	257	158	1,980
3117	L. Highlands	4,923	12	48	105	5,028	7,848	56	35	432
3118	L. Highlands	3,516	16	78	170	3,686	12,753	91	56	702
3119	Back Central	2,666	8	41	89	2,755	6,704	48	30	369
3120	Back Central	2,977	7	33	72	3,049	5,396	39	24	297
3121	Sacred Heart	3,112	17	28	61	3,173	4,578	33	20	252
3122	Sacred Heart	4,741	102	155	338	5,079	25,343	181	112	1,395
3123	South Lowell	5,023	178	232	506	5,529	37,932	271	167	2,088
3124	L. Belvidere	2,405	15	30	65	2,470	4,905	35	22	270
3125.01	Belvidere	4,497	81	172	375	4,872	28,122	201	124	1,548
3125.02	Belvidere	3,999	60	245	534	4,533	40,058	287	176	2,205
	City of Lowell	**105,167**	**1,786**	**4,323**	**9,424**	**114,591**	**706,811**	**5,058**	**3,113**	**38,907**

Source: City of Lowell Division of Planning and Development


Merrimack River
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Large Parcels for Subdivisions or
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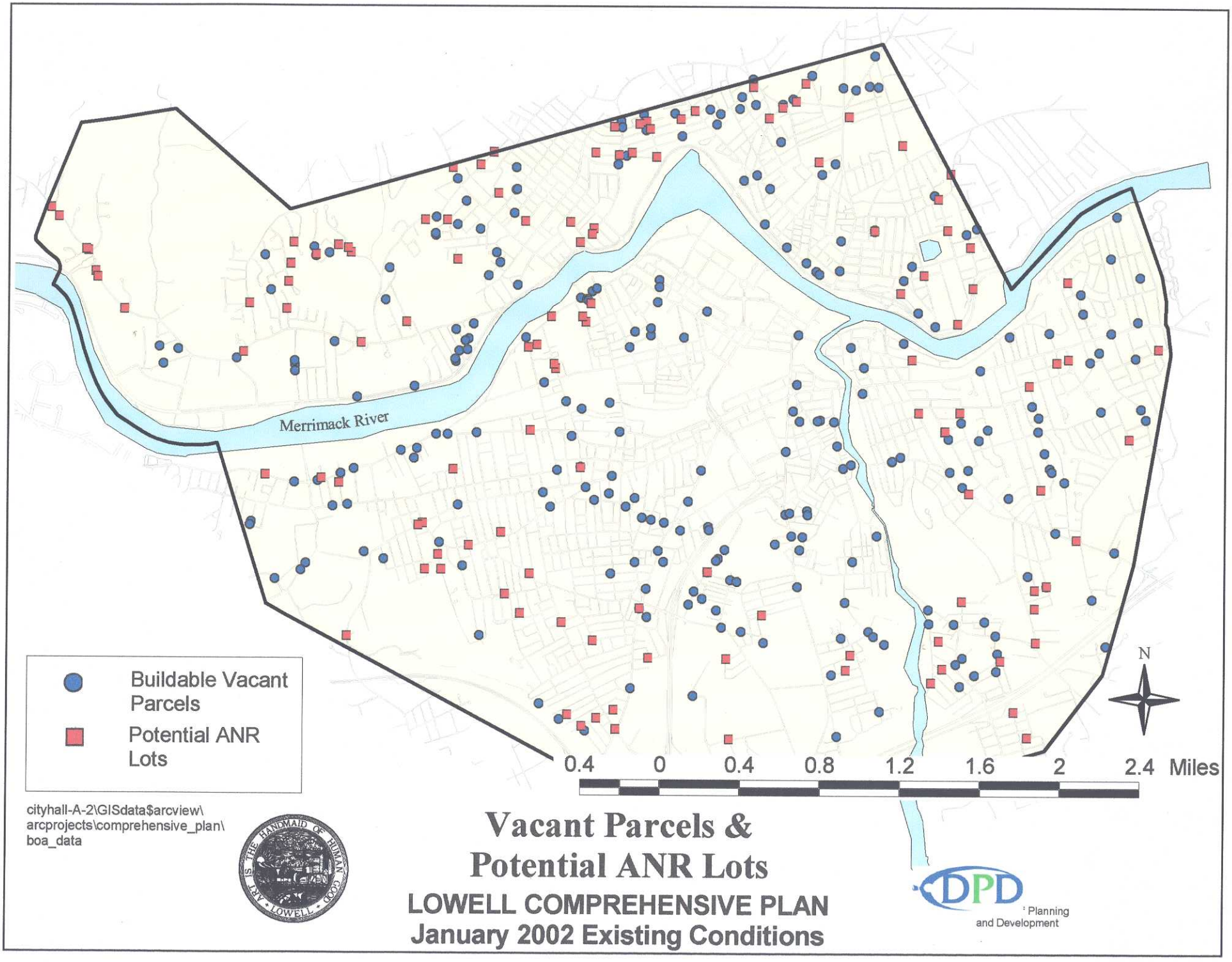
Merrimack River
Buildable Vacant Parcels
Potential ANR Lots
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Vacant Parcels &
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LOWELL COMPREHENSIVE PLAN
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